Commonwealth of Kentucky
Division for Air Quality

PERMIT STATEMENT OF BASIS

Title V Draft Permit No. V-06-009
MEADWESTVACO VIRGINIA CORPORATION
WICKLIFFE CARBON PLANT
WICKLIFFE, KY
April 4, 2006
SUKHENDU K. MAJUMDAR, REVIEWER
Plant I.D. # 21-007-00012
SIC Code: 2819
AI# 59

Pursuant to 401 KAR 52:020 Section 4, MeadWestvaco Virginia Corporation, Wickliffe Carbon Plant submitted the Title V permit renewal application, which was received by the Division on September 11, 2003. A significant revision application along with a renewal application was received by the Division on September 20, 2005. The draft permit (Number V-06-009) has been prepared to include all the revisions since initial permit was issued to the facility.

RENEWAL AND REVISIONS:

Initial Title V operating permit (Number V-99-009 Revision 1) was issued on March 10, 1999 to the Westvaco Corporation, Wickliffe, KY. The permit expired on March 10, 2004.

MeadWestvaco Virginia Corporation, the original company, divested a large portion of its paper business through sale. One of the paper mill involved in the sale was the Wickliffe fine paper mill adjacent to the carbon plant. The original renewal application submitted on September, 2003, included both the paper mill and carbon plant. Upon the close of the divestiture, the two facilities are no longer considered under common control and are considered stand-alone operation. Based on the revised estimate of potential Hazardous Air Pollutant (HAP) emissions, the facility qualifies as a minor source of HAP emissions and has applied for a federally enforceable limit of HAP emissions. The revised application for Title V permit renewal includes other modifications necessitated for the stand-alone operation of the carbon plant.

Change Summary:

1. Provision for Temporary Boiler. Wickliffe Carbon Plant receives steam from the adjacent New Page Mill. Prior to the divestiture of the mill, steam supply was consistent. Unplanned steam outages are now a significant risk to the operation of the carbon plant. The revised permit renewal application includes the temporary/leased package boiler to operate no more than 180 days per calendar year for uninterrupted carbon production which is very critical for evolving market demands. Temporary/leased boiler shall use natural gas as fuel.
2. Federally Enforceable HAP limits. Due the stand-alone operation of the Mead Westvaco Carbon Plant, the facility is now a minor source of hazardous air pollutants. As such federally enforceable limits must be incorporated in the Title V permit to achieve minor source status.

3. Insignificant Activities. A 550-gallon gasoline tank has been installed to use for plant vehicle refueling. Emissions from the tank have been considered as an insignificant activity.

SOURCE DESCRIPTION:

MeadWestvaco Carbon Plant produces activated carbon products principally used for onboard vapor recovery of automobile refueling emissions. Major facility components are:

1. Saw Dust Storage and Handling.
2. Acid Mixing, Activating Kiln and Acid Recovery.
3. Drying, Grinding and Finishing.
4. Post Activation process- Pre-heaters and Reactors (Catalyst Plant)

Within and between these processes are various storage and material handling system.

Saw dust is used as the activated carbon precursor and is stored in a sawdust pile contiguous to the plant. The sawdust is screened and then transferred to a sawdust feed tank where sawdust is mixed with phosphoric acid and conveyed into the activation kiln. The sawdust-acid mixture flows through the kiln and undergoes oxidation. Natural gas is combusted to provide heat in the kiln. The flue gas flows countercurrent to the carbon and goes to the after burner and scrubbing system to destroy organic vapor compound and to reduce the particulate matters respectively. The product exits the activation kiln into the acid recovery and carbon wash area. The recovered acid is recycled. The carbon product is filtered and then dried in a rotary kiln. The dried carbon then screened and stored for packaging and shipping. A part of the carbon product is sent to the pre-heaters and reactors for further processing to produce specialty product. The special product manufacturing is a trade secret and the process is not disclosed.

COMMENTS:

Type of control and efficiency:

Process Unit	Type of Control	Efficiency	Pollutant
EP020 Acid/Mixing, Activation Kiln and Acid Recovery	**NG Fired After burner Venturi and Wet Scrubbers**	**99.56% 97.10%**	**CO, VOC, HAP PM10, PT**
EP030 Drying, Screening, Grinding and Packaging Process	**Bag House and Cartridge Filters**	**99%**	**PM10, PT**
EP070 Catalyst Carbon – Pre-heaters and Reactors	**NG Fired After burner Venturi and Wet Scrubbers**	**94.96% 98.35%**	**CO, VOC, HAP PM10, PT**
EP040 Bulk Carbon Storage Tank	**Dust Collectors 4 Cartridge Filters**	**99%**	**PM10, PT**
EP080 Catalyst Carbon Storage	**Dust Collectors , Cartridge Filters**	**99%**	**PM10, PT**
EP150 Lime Storage Silo	**Dust Collectors , Cartridge Filters**	**99%**	**PM10, PT**

Applicable regulations:

401 KAR 59:010, New Process Operations, applies to the particulate matter emissions from units constructed on or after July 2, 1975, which are not subject to another emissions standard with respect to particulates in 401 KAR Chapter 59. This includes the following emissions points:

EQPT1 (EP020). Woodbase Carbon Acid/Mixing, Activation Kiln, and Acid Recovery System: Sawdust particulates and phosphoric acid particulates.
EQPT2 (EP030). Drying, Screening, Grinding and Packaging: Carbon particulates.
EQPT3 (EP070). Catalyst Plant preheaters and Reactors
STORAGE2 (EP040). Bulk Carbon Storage Tank with Rail Car Shipment.
STORAGE3 (EP080). Catalyst Carbon Storage, Product Finishing and Shipment.
STORAGE4 (EP0150). Lime Storage Silo.

401 KAR 51:017, Prevention of significant deterioration of air quality which includes carbon monoxide, nitrogen oxides, volatile organic compounds (VOC) and PM10 emissions. All the emission points shall cover the regulations.

401 KAR 59:015, New indirect heat exchangers, applicable to affected facilities with a capacity of 250 mmBtu per hour heat input or less commenced after August 9, 1972, limits particulate and sulfur dioxide emissions. The regulation shall apply to the COMB2 (EP001) steam generating package boiler.

401 KAR 63:010, Fugitive dust emissions. The regulation shall apply to EQPT1 (EP010), Sawdust Delivery/ Handling.

401 KAR 63:020, Potentially hazardous matters and toxic substances. The regulation shall apply to EQPT2 (EP030) and EQPT3 (EP070).

40 CFR 64, Compliance Assurance Monitoring. This regulation applies to the following units, pollutants, and controls:

EP020	Woodbase Carbon Acid/Mixing, Activation Kiln, and Acid Recovery System (vented through common Stack A):	CO, VOC, and PM10	Afterburner, Scrubbers and Demister
EP030	Woodbase Drying	PM10	Baghouse
EP030	Screening/Grinding/Packaging	PM10	Cartridge Filter
EP030	Speciality Thermal Carbon Process	PM10	Cartridge Filter
EP040	Woodbase Bulk Storage Tanks and Rail Shipment	PM10	Cartridge Filter
EP070	Catalyst Plant Preheaters/Reactors	CO, VOC, PM10	Afterburner and Scrubbers
EP080	Catalyst Plant Storage and Feed Systems and Product Finishing and Storage Operations	PM10	Cloth Cartridges (3)

Non-Applicable Regulations:

401 KAR 63:022 did apply to furfural and phosphoric acid emissions from the Woodbase Carbon Acid/Mixing, Activation Kiln, and Acid Recovery System in the previous Title V permit V-99-009 Revision 1. Modeling performed by the facility at worst case emission had maximum ambient air concentrations below the EPA Region 9 Preliminary Remediation Goals (PRGs) for ambient air concentrations. Therefore the state-only requirement was removed.

Compliance Demonstration:

EP001: Steam Generating Boiler: Compliance is demonstrated for the particulate matter and sulfur dioxide standards, since the potential emission rates are less than the allowables for natural gas combustion. Compliance is demonstrated for the opacity standard when the boilers are fired with natural gas.

EQPT 1(EP020) Activation Kiln process includes two natural gas burners - One supplying energy to the Activation Kiln and the second supplying auxiliary energy to the Afterburner. The Activation Kiln burner is rated at 70 mmBtu/hour and the Afterburner burner is rated at 130 mmBtu/hour. The NOx burner limits are:

Activation Kiln:	0.130 lb/mmBtu
Afterburner:	0.30 lb/mmBtu

Compliance with the PSD NO_x burner limits will be done in aggregate by comparing the calculated NOx burner factor against the effective NOx limit. The calculated NOx burner factor

is as follow:

i. Calculated Factor = $\dfrac{NO_x \text{ emissions (lb/hr) during compliance test}}{N_T}$

Where: $N_T = N_{AK} + N_{AB}$
N_{AK} = Average natural gas to Activating Kiln during compliance test, mmBtu/hour
N_{AB} = Average natural gas to Afterburner during compliance test, mmBtu/hour

ii. Effective Limit = $0.13(N_{AK}/N_T) + 0.30(N_{AB}/N_T)$

The plant is considered in compliance with the burner limits if the "Calculated Factor" is less than or equal to the "Effective Limit".

There are three (3) stacks in the plant. In the 18-month period immediately preceding the date of expiration of this permit, the permittee shall conduct performance testing on all stacks listed herein. The performance tests shall include:

i. Stack A: Emission source EP020 (For particulate matter, nitrogen oxides, carbon monoxide, volatile organic compounds, and NOx burner factor.)
ii. Stack A: Emission sources EP070 and EP080 (For particulate matter, nitrogen oxides,

carbon monoxide, volatile organic compounds, and phosphoric acid).

iii. Stack B: Emission source EP030 (For particulate matter, nitrogen oxides, carbon monoxide, and volatile organic compounds emissions.)

iv. Stack C: Emission source EP040 (For particulate matter emissions)

The performance tests shall be scheduled in a manner that will allow sufficient time:

i. To conduct the performance tests;
ii. To submit the test reports;
iii. For verification of the test results by the Division;
iv. For use of the verified results as a basis for renewal of this permit.

Stack B is a common vent to atmosphere for the following sources of particulate matter:

Source	**Particulate (including PM_{10}) Limit**
Drying Kiln (EP 030)	5.25 lb/hr
Grinding/Screening/Packaging Operations (EP 030)	1.5 lb/hr
Specialty Thermal Carbon (EP 030)	3.2 lb/hr
Lime Storage and Feed System (EP 150)	0.30 lb/hr
Total PM/PM_{10} Emission Limit on Stack B =	10.25 lb/hr

Compliance with the particulate matter (including PM_{10}) emission limits shall be demonstrated in aggregate. The plant will be considered in compliance with the above limits if the actual particulate matter emissions from Stack B are less than the sum of the particulate matter limits (10.25 lb/hr) of the individual sources. Actual emissions will be calculated as follows:

Actual Emission Rate = [Monthly dry sawdust to activation kiln] x [Emission factor observed during the last state-witnessed stack test (in pounds PM/PM10 per ton of dry sawdust] ÷ [Monthly hours of operation of the drying kiln]

Alternate Operating Scenario:
None

PERIODIC MONITORING:
Refer to the Permit Sections B, F-1 and F-2.

Emission and Operating Caps Description:

Pursuant to 401 KAR 63:020, the permittee has requested a limit to restrict the emissions of Hazardous Air Pollutant (HAP) (Formaldehyde and Methanol) to below the major source threshold for Title V permit. The permit contains a limit of less than ten (10) tons per year of individual HAP and less than 25 tons per year of combined HAP. The source will demonstrate compliance with these limitations based on the performance of the afterburner at the emission points EP020 and EP070.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provision of 40 CFR Part 60.Sec. 60.11 and 40 CFR Part 61. Sec.61.12 into its air quality regulations.